Research Report

INVESTIGATING
STRUCTURAL
UNEMPLOYMENT

RESEARCH
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84-02

Missouri Division of Manpower Planning

INVESTIGATING STRUCTURAL UNEMPLOYMENT

STATE OF MISSOURI

DEPARTMENT OF SOCIAL SERVICES

DIVISION OF MANPOWER PLANNING

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EXECUTIVE SUMMARY

Structurally unemployed workers face particularly difficult problems when trying to regain employment. These individuals have been unemployed for lengthy time periods and can secure employment only by making personal adjustments, such as learning a new skill or accepting a lesser skilled job. In Missouri, the job training community is using the Job Training Partnership Act (JTPA) to provide eligible structurally unemployed workers with the training and related services necessary to gain and retain stable employment.

This paper uses 1982 Missouri unemployment insurance records to identify and describe a group of individuals primarily composed of structurally unemployed workers. Since lengthy unemployment is a characteristic of the structurally unemployed, workers claiming benefits for longer than the average claim period, fourteen weeks, could be considered structurally unemployed. This investigation, however, terms these long-term unemployed the chronically unemployed and postulates that the chronically unemployed group contains both structurally and cyclically unemployed workers. A group of structurally unemployed workers is isolated within the chronically unemployed group by stipulating that structurally unemployed individuals must have been last employed by an industry which exhibits a noncyclical employment history. In this way we identify a group of workers who have demonstrated their need for employment assistance and who will experience difficulty returning to employment even during economic upturns. Furthermore, we consider this group of structurally unemployed workers representative of Missouri's entire structurally unemployed population.

Our analysis indicates that in 1982 134,711 Missourians were chronically unemployed and that at least 40,338 (30%) of these individuals can be categorized as structurally unemployed. While over one-half of these structurally unemployed workers lived in the St. Louis and Kansas City areas, they were distributed throughout the state in a fashion similar to that of total unemployment, indicating that no part of the state had a disproportionate number of structurally unemployed individuals. The demographic and economic characteristics of these structurally unemployed workers were found to be fairly consistent across Missouri, except for disproportionate numbers of blacks in the St. Louis and Kansas City areas and a preponderance of economically disadvantaged individuals in the southeastern portion of the state. Perhaps most importantly, by examining chronically unemployed workers' former occupations we found that certain occupations, especially service occupations, were dominated by the structurally unemployed.

These and other findings suggest that structural unemployment is a significant problem in Missouri. Job training funds which could be specifically targeted toward the structurally unemployed are already disbursed under JTPA to substate service delivery areas in a reasonably equitable fashion which takes into account the size of their respective unemployed populations. In all areas of the state a portion of these funds could be used to recruit and serve structurally unemployed workers, especially those displaced from occupations closely associated with structural unemployment. Furthermore, training should be conducted in these occupations only where program operators can insure that trainees will be placed in stable employment.

INVESTIGATING STRUCTURAL UNEMPLOYMENT

INTRODUCTION

Structural unemployment is a major concern of job training agencies who can provide structurally unemployed workers access to, and where appropriate, priority treatment in Job Training Partnership Act (JTPA) programs. Structurally unemployed workers need special attention because they experience difficulty, even during economic upturns, in returning to employment in their former industries. Furthermore, by claiming unemployment compensation for lengthy periods of time, these individuals have demonstrated their inability to secure suitable employment in other industries. In Missouri, the job training community is seeking to lessen the impact of structural unemployment by identifying affected workers and providing them with the types of training and related services necessary to gain and retain stable employment.

This paper uses an administrative database to identify a group of Missouri's structurally unemployed and to describe their characteristics and geographic distribution. While this investigation uses 1982 data, planners can track structural unemployment over time by repeating its methodology as more recent data become available.

Conceptually, structural unemployment can be described as prolonged unemployment which is usually remedied only when the unemployed worker makes a personal adjustment, such as learning a new skill or accepting a lesser skilled job. A variety of factors, all resulting in a presumably long-term decrease or absence of employer demand for an individual's particular skills and services, can induce structural unemployment. These causal factors all reflect labor market imperfections and include: technological change, declining output within an industry, a mismatch between regional labor skills and employment demand, skill levels among the unemployed too low to satisfy available job openings, and the social stigma and low remuneration associated with taking certain low skill jobs.

Dislocated workers are a special subset of the structurally unemployed who have been displaced because of technological change or declining industry affiliation.[1] JTPA recognizes dislocated workers as a distinctive group by allocating separate. funds and outlining specific program activities to promote their reemployment.

Besides structural unemployment, labor market analysts commonly recognize three other types of unemployment; frictional, seasonal, and cyclical. Frictional unemployment is

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[1] See Declining Industries and Dislocated Worker Job Training --- Missouri Division of Manpower Planning Research Report 84-01.

the short period of unemployment normally experienced when workers move from one job to another. Frictionally unemployed individuals secure employment without undergoing personal adjustments such as retraining. Seasonal unemployment is peculiar to certain jobs and particular time periods which recur annually. This type of unemployment is normally of short duration and by definition is regularly alleviated by the seasonal hiring practices of the affected workers' former industries. Cyclical unemployment is encountered during downswings in the general level of economic activity and is eliminated in the next upswing so that during nonrecession years no cyclical unemployment will be present. Cyclically unemployed workers can, and often do, remain unemployed for long time periods but can eventually return to their former occupations without adjusting their skills.

DATA LIMITATIONS

This study uses unemployment insurance claimant data collected by the state Division of Employment Security as a source of information on Missouri's unemployed. However, since these unemployment insurance records are maintained for administrative purposes rather than research efforts, several of the data's limiting features must be recognized before they can be used to investigate structural unemployment.

Unemployment insurance claimant records almost certainly understate the extent and duration of unemployment. In Missouri up to ten percent of employment is in industries that do not participate in the state's unemployment insurance program. Therefore, these workers are not represented in claimant based measures of unemployment. Moreover, while a Missouri estimate is not available, nationally almost fifty percent of all unemployment is not detected by unemployment insurance records. The majority of these uninsured unemployed are new entrants and reentrants to the labor force. Other sources of undercount would include those unemployed workers who do not file for or are not eligible for compensation, claimants who have already exhausted their benefits prior to the study period, and Missouri residents claiming compensation from other states. Furthermore, claimant file data may also underestimate the duration of unemployment among those claimants who have exhausted their benefits and, in this analysis, claimants whose insurance claims extend beyond 1982 and thus fall outside of the study period.

Another problem in using unemployment records to study structural unemployment concerns the compatibility of claimant measured unemployment and employment level changes measured by time series databases. We expected that an increase in unemployment insurance claims from a particular industry would be preceded by declining employment in that same industry. However, in two industrial sectors this was not the case, casting some doubt on the compatibility of the time series and claimant data in these industrial sectors. (See Appendix A for further discussion of this topic.)

SEPARATING UNEMPLOYMENT TYPES

Unemployment insurance records do not identify claimants by type of unemployment. Therefore, we developed a method to separate a group of structurally unemployed workers from those frictionally, seasonally, and cyclically unemployed. Frictionally and seasonally unemployed workers were removed from the data by assuming that they would not claim benefits for longer than fourteen weeks, the average claimant period in 1982. We make this assumption because we do not expect the structurally unemployed to quickly reenter employment. The remaining claimants plus all benefit exhaustees were considered to constitute Missouri's chronically unemployed population. By definition, only structurally and cyclically unemployed workers were present among the chronically unemployed. Exhaustees were included in this chronically unemployed group because they are specifically designated as potential dislocated workers under the JTPA description of dislocation, which is regarded as a subset of structural unemployment. In reality, eighty percent of the exhaustees were also long-term unemployed, fourteen weeks or longer, and, therefore, frictional and seasonal exhaustees are largely excluded from the chronically unemployed.

By virtue of their lengthy unemployment, the chronically unemployed could be considered an appropriate target for job training programs. However, by separating the chronically unemployed into groups primarily composed of either structurally or cyclically unemployed workers, we can identify a group of structurally unemployed workers who are definitely in need of job training assistance.

Ideally, structural unemployment should be examined when employment has reached peak prerecessionary levels and it is assumed that only structurally unemployed workers will be present among the chronically unemployed. However, since the last such nonrecessionary period was in 1978, we question whether the composition of the structurally unemployed has remained unchanged. We therefore chose 1982, the year for which the most recent data is available, as the study year. Because of 1982's poor economic performance both cyclically and structurally unemployed workers are present among the chronically unemployed.

The structurally unemployed can be distinguished from the cyclically unemployed by using these groups' former industries as classification tools. We expect little cyclical unemployment from industries which have demonstrated noncyclical employment patterns, work force expansion and contraction, over the past ten years. The structurally unemployed are primarily those chronically unemployed workers displaced from noncyclical industries. This industry analysis was conducted at the two digit Standard Industrial Classification (SIC) level of detail assuming that the more detailed three and four digit industries contained within these aggregates performed in a similar manner. Time series employment data, 1972 to 1982, from the Bureau of Economic Analy-

sis' <u>Wage and Salary Employment by Industry</u>, Bureau of Labor Statistics' <u>Current Employment Statistics</u> program, and the Census Bureau's <u>County Business Patterns</u> were consulted to determine the extent to which an industry is responsive to business cycle fluxuations.

Industries exhibiting employment patterns responsive to business cycles, especially economic downturns, were classified as cyclical industries while industries resisting business cycle fluctuations were considered noncyclical. Some industries could not be classified as being cyclical or noncyclical in their employment practices because of ambiguity among the different databases or, in some cases, a complete lack of data due to confidentiality and disclosure regulations. These industries were placed in a residual group about which little can be said except that the unemployed from these residual industries are predominately former government workers.

This approach of separating the chronically unemployed into groups of structurally and cyclically unemployed workers assumes that most, but not all, of the chronically unemployed can be correctly identified as structurally or cyclically unemployed according to their former industries' employment patterns. It is highly improbable that this subjective classification scheme will yield a group of workers who are all either structurally or cyclically unemployed. Little can be done to identify those workers within the structurally unemployed group who are actually cyclically unemployed. However, given the extreme and uniform noncyclical nature of structurally unemployed workers' former industries, we believe that only a small portion of the structurally unemployed group has been mistakenly classified. Further, while recognizing that this group does not contain all of Missouri's structurally unemployed workers and that its members' characteristics cannot be collectively ascribed to specific individuals, we believe that, as a group, its characteristics reasonably represent those of the entire structurally unemployed population.

A further industry distinction can, however, be made within the cyclically unemployed group to remove some of the workers who are actually structurally unemployed. The former industries of some of the cyclically unemployed have shown long-term employment declines which are associated with dislocation and thus structural unemployment.[2] The group of workers displaced from these

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[2] Regression lines were fitted to annual employment figures provided by the Bureau of Economic Analysis, Bureau of Labor Statistics, and Bureau of the Census to measure the flow of employment change from 1972 to 1982. Those two digit (SIC) industries which exhibited a negative sloping trend line, as determined by a majority of the available databases, were considered to be employment-losing, or declining industries. See <u>Declining Industries and Dislocated Worker Job Training</u> --- Missouri Division of Manpower Planning Research Report 84-01.

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cyclical and declining industries is thought to contain large proportions of both structurally and cyclically unemployed workers. Therefore, the workers displaced from cyclical and declining industries were removed from the cyclically unemployed group to form a third group within the chronically unemployed. If we can associate particular characteristics (e.g., demographic, economic, occupational and geographic) with the structurally and cyclically unemployed then it may be possible to use their characteristics to determine whether the group displaced from cyclical and declining industries, which contains both structurally and cyclically unemployed workers, is autonomous or more closely related to the structural group or the cyclical and nondeclining group.

The constituent two digit (SIC) industries within the non-cyclical, cyclical and declining, and cyclical and nondeclining industrial categories exhibit a high degree of similarity. The cyclical and nondeclining industries are dominated by manufacturing industries and also contain all of the construction industries. The cyclical and declining industries are also dominated by manufacturing industries and include all of the mining industries for which Missouri data are available. The noncyclical industries are dominated almost wholly by service industries. The finance industries fall into the noncyclical and the cyclical and nondeclining categories while the trade industries are fairly well distributed throughout all three industrial groups. This internal consistency suggests that, in a general sense, the employment patterns of entire industrial sectors can be described as potential indicators of structural unemployment, cyclical unemployment, or a combination of the two, among the long-term unemployed.

ANALYSIS OF MISSOURI'S STRUCTURALLY UNEMPLOYED

In Missouri, job training agencies are interested in finding ways to better serve structurally unemployed workers through appropriate program designs and modifications. If one accepts the foregoing methodology's assumptions and limitations, the system outlined can be used to measure the incidence and regional severity of structural unemployment. Once a group of structurally unemployed workers has been identified, their economic, demographic, and occupational characteristics can be examined to assist in determining appropriate program designs. Researchers can also get a better understanding of a population that should be served in job training programs by investigating correlations between structural unemployment and certain indicative characteristics. Furthermore, these analyses can be performed at the substate level profiling the geographic distribution of a group of Missouri's structurally unemployed workers.

Using the methodology developed above, unemployment records indicate that in 1982, 134,711 Missourians were chronically unemployed. Of these individuals, 40,338 (30%) were displaced from noncyclical industries and thus constitute our best available

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measure of Missouri's structurally unemployed. The remaining categories cyclical and nondeclining, cyclical and declining, and residual respectively claimed 49,385 (37%), 24,447 (18%), and 20,541 (15%) of the chronically unemployed total.

In accordance with JTPA statutes Missouri has been divided into fifteen regional planning and administrative units called Service Delivery Areas (SDAs). In this study the four SDAs in the St. Louis SMSA and the two SDAs in the Kansas City SMSA have been respectively combined to facilitate substate analysis. (See SDA map in Appendix B.)

In 1982 the greatest proportion of Missouri's chronically unemployed population, 50,340 (37%), lived in the St. Louis area with the second largest concentration, 22,750 (17%) residing in the Kansas City area. The structurally unemployed group was slightly more urban as 16,903 (42%) lived in St. Louis and 6,909 (17%) in Kansas City. (See Appendix C, Tables 1 and 2.)

Among SDAs the proportion of the chronically unemployed population accounted for by structurally unemployed workers ranged from a high of thirty-three percent in St. Louis to a low of twenty-four percent in SDA 9, south central Missouri. The Kansas City area and SDA 8, southwest Missouri, had the second and third highest proportions as thirty percent and twenty-nine percent of their respective chronically unemployed populations were classified as structurally unemployed. (See Appendix C, Table 3.)

Disparity value analysis, a statistical procedure which measures the geographic distribution of a particular property or characteristic, indicates that only the St. Louis area has a discernable concentration of structurally unemployed workers relative to other types of chronically unemployed workers. (See Appendix C, Table 4.) This implies that with the exception of a minor concentration in St. Louis, Missouri's structurally unemployed are distributed across SDAs as are the remainder of the chronically unemployed. Furthermore, location quotient analysis, another statistical operation which measures geographic distribution, indicates that Missouri's structurally unemployed are distributed in much the same way as its total unemployed are distributed. (See Appendix C, Table 5.)

Job training planners can gain insight into the special training needs of the structurally unemployed population in their area by examining the characteristics of local unemployment insurance claimants who meet the definition of structurally unemployed. Once planners have an idea of what the affected population looks like they can modify programs and develop new training activities to better serve these individuals. Furthermore, since it is assumed that structural unemployment will be present even during economic upturns, planners can examine the characteristics of these local groups to get an idea of the sorts of program participants that they will be serving in the future.

The characteristics available for analysis are limited to those data items collected by the state Division of Employment Security on unemployment insurance applications. At least seven of these claimant attributes are directly applicable to local job training program designs. (See Appendix C, Table 6.)

The available demographic characteristics most relevant to job training are gender, race, age, and handicapped status. SDAs having a relative abundance of structurally unemployed males or females may need to initiate special efforts to place program participants in nontraditional occupations. However, none of Missouri's SDAs exhibit signs of a gender imbalance. Since racial discrimination is a problem in job placement, areas such as St. Louis and Kansas City which have a relatively high proportion of nonwhite structurally unemployed workers may need to make special efforts to successfully serve minority workers. Younger and older structurally unemployed workers are at a disadvantage in the labor market as younger workers typically have little work experience and older workers often demand relatively high salaries and can be expected to retire relatively soon. None of the SDAs have extremely young (16-22) or old (over 54) structurally unemployed populations with the former in all cases being below twenty percent and the latter below fifteen percent. Handicapped status may indicate that special job training and placement efforts will be necessary to serve this population. Therefore, SDAs with a relatively high proportion of handicapped structurally unemployed workers should be prepared to address this situation. SDA 4, west central Missouri, has a greater proportion of handicapped structurally unemployed workers, five and one-half percent, than does any other SDA.

Only two economic characteristics[3] are available for analysis, economically disadvantaged status[3], and claiming unemployment benefits for the maximum period allowed, twenty-six weeks. Since both of these characteristics indicate economic distress, SDAs whose structurally unemployed population has a high proportion of either of these attributes may need to provide additional supportive services during job training. SDAs 10 and 11, south and southeastern Missouri, have the greatest economically disadvantaged problem as respectively about thirty-four percent and twenty-six percent of their structurally unemployed workers are also disadvantaged. In most SDAs approximately half of the structurally unemployed exhausted

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[3] ECONOMICALLY DISADVANTAGED -- A person who: (1) is a member of a family which receives cash welfare payments under Federal, State, or local welfare programs; (2) is a member of a family which has a total family income, which in relation to family size, does not exceed the poverty level determined in accordance with criteria established by the Office of Management and Budget or 70 percent of the lower living standard income level, whichever is higher.

their unemployment insurance benefits after receiving compensation for twenty-six weeks. For further discussion of this topic see Appendix D.

Job training professionals can also use unemployment insurance claimant records to identify occupations which are closely associated with the structurally unemployed. In the absence of a more sophisticated statistical measure we consider an occupation strongly affiliated with structural unemployment when: 1) over half of its chronically unemployed workers are classified as structurally unemployed, and; 2) this number is at least twice that of its chronically unemployed workers classified in either the cyclical and declining or cyclical and nondeclining categories. This simple criterion will not identify all of the former occupations of structurally unemployed workers. Rather, this scheme will identify a group of occupations from which chronically unemployed workers are most likely to also be structurally unemployed.

Analysis of Missouri's unemployment insurance records indicates that by this criterion fifteen occupations are concentrated among the workers from the structurally unemployed group. (See Appendix C, Table 7.) The majority of these occupations are, in one way or another, related to the service sector. This reflects the concentration of service industries in the noncyclical category. Since workers displaced from these fifteen occupations are presumably unemployed because either the wage rate is too low to sustain long-term employment or there is an excess supply of individuals for these jobs, these occupations present limited opportunities for job training. Therefore, one component of job training programs designed to aid structurally unemployed workers would be to recruit individuals displaced from these occupations and retrain them for other jobs. Each of Missouri's SDAs has at least 500 chronically unemployed individuals whose last employment was in one of the fifteen occupations identified as closely associated with structural unemployment.

Disparity value and location quotient analysis both indicate a significant relative concentration of chronically unemployed workers displaced from the fifteen occupations identified above in the St. Louis SMSA and to a much lesser degree in the Kansas City SMSA. (See Appendix C, Table 8.) Job training programs serving the structurally unemployed in the state's two metropolitan areas, especially St. Louis, should recognize the relative abundance of affected individuals in their respective areas and take appropriate steps to facilitate their recruitment, retraining, and reemployment.

Since the occupations of unemployment insurance claimants are distributed unevenly across the unemployment classes, occupations were used to investigate whether the cyclical and declining group is more closely related to the cyclical and nondeclining or the noncyclical group. Using correlation analysis the occupational frequencies of chronically unemployed workers dis-

placed from cyclical and declining industries were compared with those of chronically unemployed workers displaced from both cyclical and nondeclining industries and noncyclical industries. Because the occupational frequencies were not distributed normally, nonparametric correlations were calculated. The resulting occupational correlations indicate that the cyclical and declining group is more closely associated with cyclical unemployment than structural unemployment. Therefore, as a group, workers displaced from the cyclical and declining group should not be treated in the same manner as workers displaced from the noncyclical group when investigating or addressing structural unemployment. (See Appendix C, Table 9.)

CONCLUSION

In conclusion, there were at least 40,338 structurally unemployed workers in Missouri during 1982. By definition these workers claimed unemployment insurance compensation either for longer than fourteen weeks or exhausted their benefits, and in all cases where displaced from an industry which demonstrated a noncyclical employment pattern. While over half of these individuals lived in the St. Louis and Kansas City areas they were distributed throughout the state in much the same way as total unemployment, indicating that none of the SDAs had a disproportionate number of structurally unemployed workers. The demographic and economic characteristics of the structurally unemployed were found to be fairly consistent across SDAs except for disproportionate numbers of blacks in the St. Louis and Kansas City SMSAs and a preponderance of economically disadvantaged individuals in SDAs 10 and 11, the south central and southeastern portions of the state. It appears that certain occupations, especially service occupations, are concentrated among the structurally unemployed. Workers displaced from these occupations were relatively concentrated in the St. Louis and Kansas City areas. Finally, through occupational analysis, it appears that the group of chronically unemployed workers displaced from cyclical and declining industries is more closely associated with the group unemployed from cyclical and nondeclining industries than the group from noncyclical industries. This indicates that while the group of workers unemployed from cyclical and declining industries assuredly contains many structurally unemployed workers, the group as a whole shares much the same occupational structure as the cyclically unemployed group and cannot be treated as is the structurally unemployed group.

Job training professionals can translate these research findings into policy recommendations which, when implemented in training programs, can lead to better informed and more appropriate strategies for serving structurally unemployed workers. The structurally unemployed are distributed throughout the state in a fashion similar to that of total unemployment. Therefore, funds which could be used for training structurally unemployed workers are already disbursed to SDAs under JTPA in a reasonably equitable fashion which takes into account the size of their respective unemployed populations.

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Job training programs under JTPA primarily focus on the economically disadvantaged. However, only about twenty percent of Missouri's structurally unemployed workers are economically disadvantaged. JTPA stipulates that up to ten percent of Title II-A participants may be individuals who are not economically disadvantaged, if such individuals have encountered barriers to employment. This legislative abatement can properly be used to direct Title II-A funds to serve some of the structurally unemployed who are not economically disadvantaged.

Training should be conducted in the occupations identified as closely associated with structural unemployment only where program operators are certain that trainees can be placed in stable employment. Customized training and on-the-job training are examples of training arrangements under which program operators can insure that particular job openings and employers will provide trainees with stable employment. Workers displaced from occupations closely associated with structural unemployment are clearly in need of retraining. Therefore, job training programs should not only minimize training in these affected occupations but should also recruit workers unemployed from these occupations in all SDAs. Special recruiting efforts should be conducted in the St. Louis and Kansas City areas where our analysis indicates a relative concentration of such affected workers.

APPENDIX A

EMPLOYMENT AND UNEMPLOYMENT
DATA COMPATIBILITY

The Employment Security 203 quarterly reports, Characteristics of Unemployment Insurance claimants, were tracked along with time series employment data from 1979 to 1982 to test the compatibility of the data sources. Ideally, a decrease in industry employment levels should be accompanied, after a reasonable time lag, by a corresponding increase in unemployment insurance claimants from that industry. Unfortunately, the 203 reports show industry unemployment at very aggregated levels for the nonmanufacturing industries, thereby excluding detailed comparisons of the data sources.

At these aggregated levels the Finance and Service industries were the only two sectors that displayed an increase in unemployment without at least a comparable decrease in the sector's employment. The Finance industry discrepancy is explained at the two digit industry level of the time series data. The more aggregated industry data masked employment declines taking place at more detailed levels.

The masking of employment declines in the aggregated data did not explain all the unemployment discrepancy found in the Service industry. Examining the detailed industries of the time series data, analyzing the four digit series when possible, partially explained the discrepancy but still left some 5,000 unemployed unaccounted for by industry employment decreases. Since complete four digit detail is not available for all industries, the remaining unemployed could be displaced from the unavailable four digit industries.

An alternative explanation is that recessions may draw unemployed workers on to the unemployment insurance rolls who during nonrecessionary periods would not have claimed compensation. New hiring typically declines during recessions thereby increasing the expected duration of employment. This decline in new hiring may change the attitudes of those workers who are eligible for unemployment insurance but who normally would not have claimed benefits because they were expecting to quickly find another job. This effect would be most prominent in the Service industries where the movement into and out of jobs is the largest. This suggests that in the Service industries the two digit industry classification scheme may mask cyclical three and four digit industries and that recessionary periods may be the most appropriate periods for examining unemployment from these industries.

APPENDIX B

Missouri
Job Training Partnership Act
Service Delivery Areas
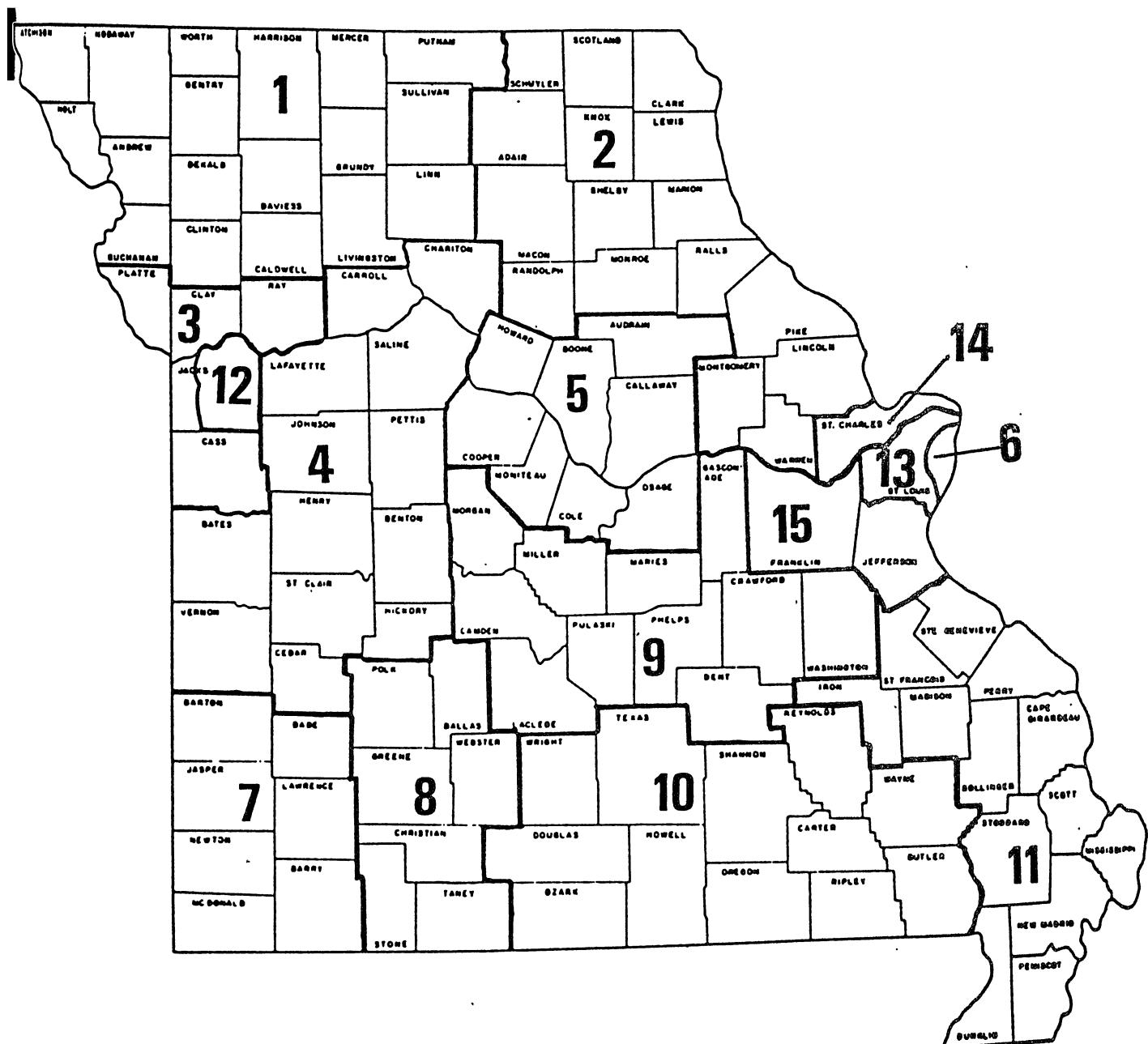
APPENDIX C

TABLE 1

MISSOURI'S CHRONICALLY UNEMPLOYED
1982

Area	Cyclical & Nondeclining	Cyclical & Declining	Structural	Residual	Total
1	2317	1371	1556	891	6135
2	2000	1112	1537	763	5412
K.C.	8740	3255	6909	3846	22750
4	1879	1190	1519	884	5472
5	1956	994	1311	843	5104
St.L.	17760	8034	16903	7643	50340
7	2117	980	1413	724	5234
8	3679	1118	2501	1249	8547
9	2112	1361	1384	914	5771
10	2102	1158	1518	962	5740
11	3580	2987	2977	1454	10998
*	1143	887	810	368	3208
Total	49385	24447	40338	20541	134711

MISSOURI'S CHRONICALLY UNEMPLOYED EXPRESSED AS PERCENTAGES OF CONSTITUENT UNEMPLOYMENT CATEGORIES

TABLE 2

Area	Percent Cyclical and Nondeclining	Percent Cyclical and Declining	Percent Structural	Percent Residual	Total
1	5	6	4	4	5
2	4	5	4	4	4
K.C.	18	13	17	19	17
4	4	5	4	4	4
5	4	4	3	4	4
St.L.	36	33	42	37	37
7	4	4	4	4	4
8	7	5	6	6	6
9	4	6	3	4	4
10	4	5	4	5	4
11	7	12	7	7	8
*	2	4	2	2	2
Total	99	102	100	100	99

Note: Totals may not equal 100% due to rounding.

* These individuals could not be placed in SDAs because their unemployment insurance claimant records lacked county designations.

TABLE 3

SDA PERCENT DISTRIBUTION OF MISSOURI'S CHRONICALLY
UNEMPLOYED BY CONSTITUENT UNEMPLOYMENT CATEGORIES

Area	Percent Cyclical and Nondeclining	Percent Cyclical and Declining	Percent Structural	Percent Residual	Percent Total
1	38	22	25	15	100
2	37	21	28	14	100
K.C.	38	15	30	17	100
4	34	22	28	16	100
5	38	20	26	16	100
St.L.	35	17	33	15	100
7	40	19	27	14	100
8	43	13	29	15	100
9	37	24	24	15	100
10	37	20	26	17	100
11	33	27	27	13	100
*	36	28	25	11	100

* These individuals could not be placed in SDAs because their unemployment
insurance claimant records lacked county designations.

TABLE 4

SDA DISPARITY VALUES FOR MISSOURI'S
CHRONICALLY UNEMPLOYED 1982

AREA	CYCLICAL AND NONDECLINING	CYCLICAL DECLINING	STRUCTURAL	RESIDUAL
1	.0211	.1265	-.1067	-.0293
2	.0053	.0770	-.0363	-.0448
K.C.	.0389	-.1383	.0077	.0613
4	-.0464	.1099	-.0507	.0279
5	.0316	.0464	-.0983	.0398
St.L.	-.0427	.0954	.1166	-.0086
7	.0719	.0244	-.0679	-.0547
8	.1237	-.1713	-.0177	-.0265
9	-.0017	.1582	-.1400	.0172
10	-.0013	.0667	-.0809	.0479
11	-.0864	.2580	-.0693	-.0818

Disparity analysis measures the relationship between two mutually exclusive characteristics within the same population and graphic area. This relationship is expressed as a numerical quantity termed a disparity value which can be used as an index number to measure the geographic distribution of the relationship. Disparity values are derived from the formula:

$$DIS = \log \frac{[p(1-q)]}{[q(1-p)]}$$

where p and q are the ratios of the sub area to the whole for the particular properties being examined. In this analysis p is the individual SDA's share of the state's structural unemployed and q represents the particular SDA's share of the state's nonstructural chronically unemployed. Similar disparity values are provided for the other types of chronic unemployment.

In interpreting disparity values a value of zero indicates parity between an SDA's two groups, while positive and negative values indicate the extent and direction of disparity. Therefore, positive values above some arbitrarily defined measure of significance, conventionally .1, indicate relative concentrations of the characteristic in question.

TABLE 5

SDA LOCATION QUOTIENTS FOR MISSOURI'S
CHRONICALLY UNEMPLOYED 1982

Area	Percent Cyclical and Nondeclining	Percent Cyclical and Declining	Structural	Residual
1	1.03	1.23	.85	.95
2	1.01	1.13	.95	.92
K.C.	1.05	.79	1.01	1.11
4	.94	1.20	.93	1.06
5	1.05	1.07	.86	1.08
St.L.	.96	.88	1.12	1.00
7	1.10	1.03	.90	.91
8	1.17	.72	.98	.96
9	1.00	1.30	.80	1.04
10	1.00	1.11	.88	1.10
11	.89	1.50	.90	.87

Location quotients compare the sub-regional distribution of a given characteristic
with the distribution of a larger population. This is accomplished by dividing the
sub-region's proportion of the characteristic by the sub-region's proportion of the
larger population. Location quotients are derived from the formula:

$$LQ = \frac{(E_i - E_t)}{(P_i - P_t)}$$

where E_i and E_t are the frequency of some characteristic or sub-group of the popula-
tion in area i and the total region, respectively, and P_i and P_t are the total popu-
lations of i and the total region, respectively. A location quotient value of 1
indicates that the sub-region has the same level of concentration as the larger
region; values between 0 and 1 indicate a "shortage" and values above 1 indicate
a greater concentration than in the larger region.

In this analysis location quotients are used to measure the relationships between
the geographic distributions of structural and total unemployment. The values of
the location quotients can be interpreted as measuring the degree to which an SDA's
number of structurally unemployed deviates from the expected number as determined
by its share of the state's total unemployment. Location quotients rather than
disparity values were used in this operation because unemployment data for 1982 is
available only as an annual average and as such, is not appropriate for disparity
analysis.

TABLE 6

SELECTED CHARACTERISTICS EXPRESSED AS PERCENTS

OF SDAs STRUCTURALLY UNEMPLOYED

Missouri 1982

Area	Male	Female	Nonwhite	Age 16-22	Age over 54	Handicap	26 Weeks U.I. Benefits	E(D:
1	47.3	52.7	2.4	17.0	12.2	3.8	48.2	1!
2	45.0	55.0	9.5	17.0	12.1	3.5	47.2	1'
K.C.	49.7	50.3	32.4	13.0	10.5	3.7	51.6	1:
4	45.5	54.5	4.3	16.9	11.1	5.5	45.4	1'
5	51.6	48.4	14.7	18.2	9.2	4.0	52.5	2(
St.L	48.9	51.1	39.0	14.1	9.3	2.9	50.3	1'
7	51.0	49.0	2.8	14.8	13.0	3.5	48.4	1(
8	50.1	49.9	10.2	16.4	10.3	2.6	47.1	2
9	44.3	55.7	1.5	16.6	11.2	2.3	38.5	1
10	44.0	56.0	3.2	16.0	10.2	2.5	40.5	3.
11	51.4	48.6	10.9	17.1	10.4	2.9	39.1	2(

TABLE 7

OCCUPATIONS OF MISSOURI'S CHRONICALLY UNEMPLOYED
CONCENTRATED AMONG THE STRUCTURALLY UNEMPLOYED*

DOT Code and Occupation Title**	Number of Structurally Unemployed	Percent of Chronically Unemployed Occupation Title
079: Medicine and Health, not elsewhere classified (n.e.c.)	423	72
092: Preschool, primary school, and kindergarten education	502	87
187: Service industry managers and officials	535	64
211: Cashiers and tellers	1756	59
237: Information and reception clerks	421	56
249: Miscellaneous clerical, n.e.c.	326	60
311: Waiters/waitresses, and related food service	1297	63
312: Bartenders	384	70
313: Chefs and cooks, hotel and restaurants	1287	69
318: Kitchen workers, n.e.c.	604	62
355: Attendants and recreation service, n.e.c.	1645	76
372: Security guards and correction officers, except crossing tenders	420	53
381: Porters and cleaners	1015	53
409: Plant farming and related occupations	132	73
913: Passenger transportation, n.e.c.	463	76

* The percent classified as structural must be greater than 50 and at least twice as large as the next highest classification.

** Dictionary of Occupational Titles classification scheme.

TABLE 8

MEASURES OF CONCENTRATION FOR MISSOURI'S

STRUCTURALLY DOMINATED OCCUPATIONS 1982

AREA	DISPARITY VALUE[*]	LOCATION QUOTIENT[**]
1	-.025	.955
2	-.031	.198
K.C.	.089	4.264
4	-.006	.935
5	-.059	.080
St.L.	.205	10.943
7	-.020	.520
8	.044	1.419
9	.056	.990
10	-.028	.437
11	-.021	.071

[*] Measures the distribution of chronically unemployed workers displaced from structurally dominated occupations relative to the distribution of other chronically unemployed workers.

[**] Measures the distribution of chronically unemployed workers displaced from structurally dominated occupations relative to the distribution of all chronically unemployed workers.

TABLE 9

MISSOURI'S

OCCUPATIONAL CORRELATIONS OF CYCLICAL AND

DECLINING CATEGORY

1982

Area	With Cyclical and Nondeclining	With Noncyclical
Statewide	.70	.48
1	.43	.22
2	.47	.28
K.C.	.50	.38
4	.37	.33
5	.41	.21
St.L.	.65	.38
7	.47	.38
8	.50	.45
9	.49	.23
10	.44	.25
11	.47	.36

APPENDIX D

INVESTIGATING CHARACTERISTIC IDENTIFICATION
OF THE STRUCTURALLY UNEMPLOYED

This analysis investigates whether particular characteristics can be ascribed to Missouri's structurally unemployed. The characteristics examined are sex, age, race, welfare, handicapped, economically disadvantaged, length of unemployment insurance eligibility and length of unemployment insurance claimed.

Missouri unemployment insurance claimant data are again used to examine the characteristics of the unemployed. However, whereas we earlier investigated only the characteristics of the structurally unemployed, here we investigate the relationship between individuals' characteristics and structural unemployment among the chronically unemployed.

The chronically unemployed were divided into groups based on their former industries' employment pattern. Each group was assigned a probability of whether its members were structurally unemployed relative to the other groups. Using industry employment time series, Missouri's industries were identified as either cyclical and nondeclining (responsive to cyclical downturns but not showing long-term employment decline), cyclical and declining (responsive to cyclical downturns and showing long-term employment decline), noncyclical (not responsive to cyclical downturns), or other (lacking data or displaying an indeterminant pattern). The other category was discarded because it was not certain how this group should be treated in reference to structural unemployment.

Relative probabilities of any chronically unemployed individual being structurally unemployed were associated with the three categories. It was assumed that chronically unemployed from noncyclical industries have the highest probability of being structurally unemployed. The next highest probability would be the chronically unemployed from cyclical and declining industries and the lowest probability would be from the cyclical and nondeclining industries.

The noncyclical category was ranked as having the highest probability because the industries of this category are generally not responsive to business cycle downturns. Therefore, the noncyclical category has few, if any, cyclically unemployed workers among its chronically unemployed. This leaves structural unemployment to account for the unemployed in this group.

The cyclical and declining category is ranked in the middle because its industries' employment patterns are responsive to business cycle downturns and also have long-term tendencies to lose employment. Cyclical responsiveness suggests that cyclically unemployed workers are included among its chronically unemployed, while these industries long-term tendency to lose employment suggests that a substantial number of their unemployed were structurally unemployed.

The cyclical and nondeclining category is ranked the lowest because its industries have no long-term tendency to lose employment and are responsive to business cycle downturns. This suggests that a very large number of the chronically unemployed in this group are cyclically unemployed.

This ordinal ranking of the categories with respect to the probability of any individual in the groups being structurally unemployed provides a nonparametric variable measuring structural unemployment's association with each group. This variable can be related to dichotomous characteristic variables to determine the relationship between particular characteristics and structural unemployment among the chronically unemployed. Table 1 displays the dichotomous variables used in this investigation.

The computed correlations for the characteristics are shown in Table 2 and indicate that none of the characteristics are robustly associated with structural unemployment. The signs of the correlation coefficients for each variable are consistent across all the areas but are all less than .3. Such small correlation coefficients suggest that the structurally unemployed cannot successfully be identified among the chronically unemployed by using any of these characteristic variables. The only characteristic variable approaching somewhat practical correlations was the sex variable. These correlations suggest that females are slightly more likely to be structurally unemployed than are males among the chronically unemployed.

In conclusion neither sex, age, race, handicapped, welfare, economically disadvantaged, length of unemployment insurance eligibility, nor length of unemployment insurance claimed can be ascribed to the structurally unemployed with any strong conviction. However, these results may be contingent on the classifications used. If greater, or more, distinctions could be made between the cyclically and structurally unemployed the results may have differed.

These results demonstrate the difficulty in distinguishing between the cyclically and structurally unemployed. This leaves the planner or analyst to either disregard the cyclical influence or rely on industry performance to differentiate between chronically unemployed individuals. Neither of these options are methods that provide employment and training programs with definitive groups to be served.

TABLE 1
DESCRIPTION OF CHARACTERISTIC VARIABLES

VARIABLE	GIVEN A VALUE OF ONE	GIVEN A VALUE OF TWO
Sex (Female)	Male	Female
Age (Older)	Under 54	54 or Over
Age (Youth)	22 or Over	Under 22
Handicapped	Not Handicapped	Handicapped
Race (Nonwhite)	White	Nonwhite
Welfare	Not Welfare	Welfare
Economically Disadvantaged	Not Disadvantaged	Disadvantaged
UI Eligible (Maximum)	Under 26 Weeks	26 Weeks
UI Claimed (Maximum)	Under 26 Weeks	26 Weeks

TABLE 2
CHARACTERISTICS AND STRUCTURAL UNEMPLOYMENT
Spearman Correlation Coefficients (Significant at 5% level)

*AREA	FEMALE	OLDER	HANDICAPPED	YOUTH	NONWHITE	WELFARE	ECON. DISAD.	MAXIMUM UI ELIGIBLE	MAXIMUM UI CLAIMED
SDA 1	.19		.04	.06			.05	-.03	
SDA 2	.26		.04	.04			.04	-.08	
KC SMSA	.18	.02	.02	.04	-.10	.03	.06	-.14	-.03
SDA 4	.27	.04	.03	.04	-.04			-.04	-.08
SDA 5	.19			.04	-.11	.06	.08		
SDA 7	.22	.07						-.06	-.05
SDA 8	.14			.09	-.02	.03	.07	-.13	-.06
SDA 9	.25		.04	.03				-.08	
SDA 10	.26			.05		.03	.05	-.06	
SDA 11	.22			.05	-.06	.02	.05	-.07	-.04

* St. Louis SMSA is not included because there were more data items than could be processed by SAS Proc. Corr.